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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/501,885

07/20/2004

Sou Kuroiwa

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7590

03/30/2009

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP  
1250 CONNECTICUT AVENUE, NW  
SUITE 700  
WASHINGTON, DC 20036

EXAMINER

WEINSTEIN, LEONARD J

ART UNIT

PAPER NUMBER

3746

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/501,885	<b>Applicant(s)</b> KUROIWA ET AL.	
	<b>Examiner</b> LEONARD J. WEINSTEIN	<b>Art Unit</b> 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 December 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

1. This office action is in response to the amendment of December 18, 2008. In making the below rejections and/or objections the examiner has considered and addressed each of the applicant's arguments.

#### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1-2 and 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kajiwara et al. US 5,369,972 in view of Kajiwara US 5,256,033 as evidenced by Kajiwara US 5,318,403. Kajiwara '972 teaches with the prior art of figure that it was known in the art to provide multistage pump having a plurality of intermediate casings 1 formed by press-forming a steel plate including: **[claims 1 and 2]** each of said intermediate casings 1 has a cylindrical side portion 4b, a stage flat portion, section of element 2 above the flat transition separating bottom leg of element 2 that is in contact

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with element 10, with which an axial end face 3a of an adjacent intermediate casing (as shown on the left side of element 1 in figure 6) is held in contact, a stage side portion, defined by the transition portion between the top and bottom sections of element 2, extending axially from said stage flat portion, top section of 2, and a bottom portion, leg or bottom section of 2, extending radially inward from said stage side portion, transition in 2, wherein said cylindrical side portion 4b, said stage flat portion, top section of element 2, said stage side portion, transition in 2, and said bottom portion, bottom section of 2, are integrally formed from said steel plate by said press-forming, wherein a relief plate 7 having an outer circumferential end face which is held in contact with an inner surface of a cylindrical side portion 3b of said adjacent intermediate casing, as shown in figure 6 and disclosed (col. 1 ll. 38-46) is attached to said bottom portion, bottom section of 2, of said intermediate casing 1, wherein said relief plate 7, said stage side portion, transition in 2, said stage flat portion, top section of element 2, and said inner surface of said cylindrical side portion 3b of said adjacent intermediate casing 1 form a space in which an O-ring is capable of being fitted, wherein said bottom portion, bottom section of 2, functions as a wall separating said intermediate casings 1 (left and middle casings shown in figure 6).

The prior art disclosed by Kajiwara '972 fails to teach the following limitations that are taught by Kajiwara '033 for a multistage pump including: **[claims 1 and 2]** an o-ring actually fitted in a space 31 formed by a stage side portion 27, a stage flat portion 26 and said inner surface of a cylindrical side portion 23 of said adjacent intermediate casing 21; **[claim 2]** a return vane 32 interposed between a side plate 34 and a relief

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plate 33 formed integrally with said relief plate 33; **[claims 4 and 5]** a relief plate 33 attached to a bottom portion 24 at a position near its outermost portion, designated with numeral 35 in figure 1, so as to form a gap between a radially inner portion, as defined by the bottom (innermost face) of element 33 even with the bottom (innermost face) of element 30 and the bottom (innermost face) of element 29 in abutment with element 29, of said relief plate 33 and said bottom portion 24 of said intermediate casing 21 according to an amount of deformation of said bottom portion 24 due to a differential pressure between stages 20 (col. 3 ll. 10-19).

Kajiwarra '403 teaches a feature, shown in figures 1-2, that is common to Kajiwarra '033 and is used here as evidence that modification to the prior art disclosed in Kajiwarra '972 (fig. 6) would have been obvious. Kajiwarra '403 discloses that forming a recess and that placing an o-ring within the recess between stages creates a seal between stages and increases the applicability of the casing for use in multistage pumps. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the transition portion between a bottom and top section of a bottom wall of an interstage casing as taught by the prior art disclosed by Kajiwarra '972, to have an o-ring fitted into a space between casings, as taught by Kajiwarra '033 and Kajiwarra '403, in order to provide a seal between stages so the casing could be used for a wide range of high pressure multistage pumps.

Further Kajiwarra '033 teaches that providing a return blade 32 attached to a relief plate 33 that is attached to a bottom portion of an interstage casing 20 where a gap exists between the innermost circumferential faces of each, offsets the deformability of

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a bottom wall. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify an interstage casing as taught by the prior art disclosed in Kajiwara '972, to have an o-ring fitted between a relief plate and a top section of a bottom wall provided between stages as taught by Kajiwara '033 and evidenced by Kajiwara '403, and further modified to have a return blade attached to a relief plate, as taught by Kajiwara, in order to offset the degree to which a bottom wall provided between stages is deformed during operation (col. 3 ll. 10-19).

5. Claims 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kajiwara et al. US 5,369,972 in view of Kajiwara US 5,256,033 as evidenced by Kajiwara US 5,318,403. A combination of the references with the prior art disclosed by Kajiwara '972 as discussed, teaches the limitations for a multistage pump except for the limitations that are taught by disclosure of prior art in figure 3 of Kajiwara '033. The prior teaches multistage pump provided with a return vane 7 having a height at an outer circumferential side that is larger than a height of an inner circumferential side. Kajiwara '033 discloses that this design reduces deformation of the bottom wall of an interstage case while avoiding an increase in thickness. It would have been obvious to combine a relief plate having an outer circumference with a larger height than a height of inner circumference with a relief a partition able to deform within a given limit ( $\delta$ ) in order to provide a interstage casing having a thinner bottom wall (Kajiwara '033 – col. 2 ll. 36-46).

### ***Response to Arguments***

6. Applicant's arguments filed December 18, 2008 have been fully considered but they are not persuasive.

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7. With respect to the rejection of claims 1-2 and 4-5 under 35 U.S.C. § 103(a) as being unpatentable over Kajiwara et al. US 5,369,972 in view of Kajiwara US 5,256,033 as evidenced by Kajiwara US 5,318,403, the structure disclosed a prior art in Kajiwara '972 is not suitable to be fitted with and O-ring. The applicant further argues that the guide vane side wall of 7 of Kajiwara '972 has nothing to do with positioning an interstage casing. The applicant further argues that if the side wall 7 of the prior art taught by Kajiwara '972 was brought into contact with the inner surface of the interstage casing 1, the result would be the inaccurate positioning of an interstage casing in a radial direction.

**Response:** The examiner notes the applicant's citation of column 2, line 14-22 discussing the prior art disclosed in Kajiwara '972, however the examiner emphasizes that Kajiwara '972 shows that it was known in the art to attach a side wall to an inner wall of an interstage casing such that at least a majority of the side wall rests against a bottom wall 2. The modification suggested by the examiner would result in the bottom wall 2 being modified so as to be formed in the shaped disclosed by element 24, 25, 26, 27, and 28 of Kajiwara '033 and surfaces of element 3 and 4 to be flat as taught by element 23 of Kajiwara '033. The space between element 7 and the outer section of element 2 just inside of element 3b is suitable to accommodate the modification of bottom wall 2 suggest by the examiner and taught by Kajiwara '033 because it provides ample space for the outer section of the modified bottom wall (element 24 of Kajiwara '033 as applied to the wall 2 of the prior art disclosed by Kajiwara '972). Although per In

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re Beattie, 974 F.2d 1309, 1312, 24 USPQ2d 1040, 1042 (Fed. Cir. 1992), the prior art is not required to be combined for the reasons contemplated by the inventor, the examiner disagrees with applicant's conclusion that at least the feature of the side wall 7 has nothing to do with positioning the interstage casing. The side wall comes into abutment with the bottom wall 2 of the next casing and even though surfaces 3a and 4a are machined to fit together, they must be machined such that the side wall comes into abutment with the bottom wall 2. The side wall may not be the primary element for positioning the casing, but the other surfaces are dimensioned so that there is a specific spatial relationship between the side wall of the one casing and the bottom wall of the next casing and therefore the side wall dictates how those surfaces are machined. In response to the applicant's argument that the periphery of the side wall is not in contact with the interstage casing, the examiner notes that this is inconsistent with the discussion of the prior art which states that "a guide vane side wall 7 that is welded to the cylindrical receptacle-like structure of the next adjacent interstage casing." It is therefore disclosed that in the prior art the side was attached to the what corresponds to an inner surface of casing 1 at a location intermediate to the bottom surface of a bottom wall of the casing in front of the casing which the side wall is welded to and an upper surface of the bottom wall of the casing it is welded to.

8. The applicant further argues that the combination of the Kajiwara '972, '033, and '403 would not include a space formed in part by a relief plate.



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**Response:** As discussed above the space between element 7 and the outer section of element 2 just inside of element 3b is suitable to accommodate the modification of bottom wall 2 suggested by the examiner and taught by Kajiwara '033 because it provides ample space for the outer section of the modified bottom wall (element 24 of Kajiwara '033 as applied to the wall 2 of the prior art disclosed by Kajiwara '972). A modification suggested by the examiner would provide a space for an O-ring and the cylindrical portion 25 of Kajiwara '033 therefore as modified, the prior art of Kajiwara '972 would teach a side wall 7 forming a space with a modified section of bottom wall corresponding to element 27 of Kajiwara '033 in which an O-ring (as taught by Kajiwara '403) and a modified section of a bottom wall corresponding to element 25 of Kajiwara '033 were disposed.

***.Conclusion***

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEONARD J. WEINSTEIN whose telephone number is (571)272-9961. The examiner can normally be reached on Monday - Thursday 7:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571) 272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/  
Supervisory Patent Examiner, Art  
Unit 3746

/Leonard J Weinstein/  
Examiner, Art Unit 3746